

Schedule - Further Information Request

1. General Matters

- a) In providing its response to the matters raised in this request for Further Information, the applicant is requested to clearly annotate any proposed amendments to the EIAR, NIS and other documentation submitted and cross reference clearly revised/new information across the submitted documentation as appropriate. It is requested that all changes are clearly identified.
- b) The scientific information provided as part of the planning application documentation should be based on up-to-date survey reports and data. Accordingly, the applicant is requested to confirm/provide justification/verification that the information submitted in support of the planning application remains relevant and appropriate at the point of submitting further information or to update same as required.
- c) The applicant is requested to confirm whether any on-going or additional surveying has been carried out since the application was lodged and, if so, the applicant is invited to submit any further survey data results and analysis and update the planning application documentation, as appropriate.
- d) The applicant is requested to provide details of an operational monitoring programme for the proposed development. In this regard, the applicant is advised that the proposed operational monitoring programme should fully inform the requirements of any future decommissioning plan(s) and justify any adaptive mitigation measures required. The proposed operational monitoring should be provided at appropriate intervals, for appropriate periods, and provide for adequate reporting to the relevant compliance authorities.
- e) The Board highlights Sections 5.3 and 5.4 of the *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*, August 2018 (2018 Guidelines), state *inter alia*:

To this end the applicant is required, in electronic form that is electronically searchable to the extent possible, to submit an EIAR accompanying any application for development consent, any revised EIAR requested by the competent authority and any remedial EIAR. Normally all text should be searchable by key words.

The Board notes that the majority of the original planning application documentation provided in soft/digital format is not searchable with the exception of headings, subheading and text within tables. For example, the word 'Courtown' in Section 17.10.1.220 in Chapter 17 is not searchable. Neither is the text in paragraphs 6.4.1.1 or 6.4.1.2.

Having regard to the 2018 Guidelines and the volume of documentation comprising the planning application, the applicant is requested, insofar as is possible, to make all text in the soft/digital copy documentation fully searchable.

- f) In relation to the MAC boundary, the applicant is requested to confirm the following having regard to the provisions of section 286(3) and (4) of the Planning and Development Act 2000 (as amended) (2000 Act):
- i. the temporary construction activities (including, inter *alia*, turbine installation) required to undertake the proposed development in the maritime area are to be undertaken within the spatial representation (map) of the MAC consent area,
 - ii. that all permanent development (including blade sweep) can be accommodated within the spatial representation (map) of the MAC consent area,
 - iii. how the design flexibility approved by the Board with respect to the siting of turbines will interact with the MAC consent area.

g) The applicant is requested to provide the location of the following proposed infrastructure used in the coastal processes models for each design option applied for:

- All offshore wind turbines and offshore substations including scour protection,
- All cables including scour and cable protection.

Please see Appendix A attached to this report.

2. Search and Rescue Requirements - Site Layout

The Irish Coast Guard (IRCG), through the Department of Transport, has raised concerns in relation to the layout of the proposed development with respect to search-and-rescue (SAR) access. The applicant is requested to consult with the IRCG, in addressing these concerns, and provide further information and clarification on such matters.

3. National Marine Planning Framework – Policy Compliance

The Board notes the information contained in Annex 1, 'NMPF Compliance Table', to the Planning Report, which sets out how the project meets the requirements of the NMPF. The Board also notes the March 2024 [Commission Notice on the threshold values set under the Marine Strategy Framework Directive 2008/56/EC and Commission Decision \(EU\) 2017/848](#), in particular the four thresholds established for habitat loss (D6C4), adverse effects on habitats (D6C5), impulsive noise (D11C1) and continuous noise (D11C2) listed in the Annex to this Commission Notice.

The Board considers the use of these thresholds would assist in achieving consistency in the presentation of the results across Irish Sea Phase 1 ORE projects, and would facilitate the assessment of the relevant NMPF policies based on EU agreed indicators and thresholds.

The applicant is therefore requested to:

- a) Model, map and present the areal and temporal extent of the potential impact of the proposed development (accounting where appropriate for each design option), for the full construction and operation campaign, on the following indicators:
 - i) the potential spatial extent of habitat lost (D6C4),
 - ii) the potential spatial extent of habitat adversely effected (D6C5),
 - iii) the modelled impulsive noise (D11C1) with and without abatement, and
 - iv) the modelled continuous noise (D11C2)
- b) Assess the results obtained for potential habitat loss and habitat adversely affected in a) above, to be assessed against the 2% thresholds established for habitat loss (D6C4) and the 25% threshold for adverse effects on habitats (D6C5) for the MSFD Celtic Seas North Inner Marine Reporting Unit, see [Ireland's Draft Marine Strategy Part 1 Article 8, 9 and 10 report 2024](#) including its annexes, published in July 2024.
- c) Assess the results obtained from modelled impulsive (with and without abatement) and continuous noise in a) to be assessed against the relevant thresholds values for impulsive and continuous noise set out in the above referenced Commission Notice.
- d) Incorporate the output from a), b) and c) and all other relevant updates made as a result of this request for further information, into a revised assessment of the NMPF policies, particularly Biodiversity Policy 2, Seafloor Integrity Policies 1, 2 and 3, Fisheries Policy 5 and Underwater Noise Policy 1. This revised assessment should fully account for the distinction the NMPF places on '*important*' species and habitats as defined on page 35 and 36 of the NMPF.

The spatial extent of the modelled potential habitat loss, habitat adversely effected and impulsive and continuous noise should be provided in GIS format, see Technical Note Appendix A.

4. Ecosystem Functions and Services Assessment

The documentation submitted does not provide specific detail, assessment, or review of the range of ecosystem functions and services which could be impacted by the proposed development. The National Marine Planning Framework (NMPF) states that proposals to protect, maintain, restore, and enhance coastal habitats for ecosystem functioning and provision of ecosystem services will be supported, subject to the outcome of statutory environmental assessment processes. Seafloor and Water Column Integrity Policy 3 of the NMPF also requires proposals to take account of the space required for coastal habitats, for ecosystem functioning and the provision of ecosystem services and to demonstrate that they will, in order of preference, avoid, minimise or mitigate for net loss of coastal habitats.

The applicant is requested to update the EIAR to include an assessment of impacts (both positive and negative) on relevant ecosystem functions and services and include mitigation measures, as appropriate. The applicant is also requested to submit a synopsis report of the relevant impacts on ecosystem functions and services. In identifying the relevant ecosystem services for assessment, including those services classified as provisioning, regulation and maintenance, and cultural services, the applicant is advised to consider the full range of ecosystem services set out in the report 'Valuing Ireland's Blue Ecosystem Services' (SEMRU of NUI Galway, 2018), as referenced in the NMPF. The report should also consider the need for an adaptive management framework for ongoing assessment and should include provision for appropriate monitoring of any mitigation measures and operational management strategies, as well as provision for decommissioning.

5. Cumulative Assessment

The Board notes that cumulative assessment is addressed under each topic-specific chapter in the submitted EIAR and addressed within Chapter 24 Summary of Cumulative Effects (and associated Appendix 3.2 Cumulative Impact Assessment Screening).

The Marine Institute in their observation raises concerns in relation to the methodology applied in the submitted cumulative effects assessment and the manner in which the information is presented, noting the lack of a standard Irish methodology in relation to CEA. The applicant is advised that guidance exists in the UK, namely Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK, September 2024 (NSIP, 2024).

The applicant is requested to revise the submitted cumulative assessment in line with NSIP (2024) and submit a standalone document to clearly demonstrate the CEA conclusions. In the interests of consistency and transparency, the applicant is requested to complete the assessment in accordance with the templates provided in NSIP (2024), namely “Appendix 1: Matrix 1 – Identification of ‘other development’ for CEA” and “Appendix 2: Matrix 1 – Assessment matrix” (see attached Appendix B). This assessment should include each of the Irish Sea Phase 1 ORE Projects, namely (Oriel WF (ABP-319799-24), NISA WF (ABP-319866-24), Codling Wind Park (ABP-320768-24), and Dublin Array WF (ABP-321992-25), and all other relevant projects in the International Council for the Exploration of the Sea (ICES) Celtic Sea and Greater North Sea ecoregions, regardless of project type. It is further requested that the applicant confirm that the now published documentation pertaining to the Irish Sea Phase 1 ORE projects, which have all been submitted to the Board for planning consent since this application was submitted, have been fully incorporated into the cumulative effects assessment.

In accordance with NSIP (2024) tiered approach, it is requested that the subject proposal and each of the Irish Sea Phase 1 ORE projects be classified under Tier 1 (“Other existing and, or approved development submitted applications under the Planning Acts or other regimes but not yet determined”).

The applicant is requested to update the application documentation, where relevant.

In the interests of comprehensiveness and for ease of reference, the applicant is strongly encouraged to liaise with the other Irish Sea Phase 1 ORE Project applicants in the preparation of the above assessment and drafting of the tables attached in Appendix B.

6. Alternatives

- a) Chapter 3 of the EIAR, 'Consideration of Alternatives', provides a justification for the location of the proposed development. Table 3.1 provides a summary of the findings of Appendix 3.4 'Arklow Bank Wind Park 2 Constraints Analysis', which examines the suitability of five regions for offshore wind energy development (east, south-east, south-west, west and north). The east coast was identified as the least constrained region within Ireland's Exclusive Economic Zone (EEZ). The applicant is requested to provide greater clarity with regards to what other sites, in addition to the subject site, were considered within the east coast region, and their specific characteristics, as part of the site selection process.
- b) The Board notes the concerns raised by Observers in relation to why the proposed development is not located at a greater distance from the coastline. It is argued that the site selection process was constrained by the MAC consent and was reliant on the foreshore lease issued in 2002 for a larger wind farm proposal at Arklow Bank. It is contended that the environmental and regulatory requirements, in addition to technological capabilities at that time were not consistent with modern day. Furthermore, the Observers query why fixed-bottom wind turbines were selected over floating wind turbines. The applicant is invited to address these concerns and provide further clarification, where relevant.

7. Coastal Processes, Marine Water and Sediment Quality

- a) The applicant is requested to provide a detailed justification for the Zone of Influence (ZOI) (i.e. two tidal excursions) used for the assessment of Coastal Processes in Chapter 6, 'Coastal Processes', of the EIAR. In particular, the applicant should provide justification for not extending the ZOI in an easterly direction.
- b) The Board understands from recently published papers (Creane, S. *et. al* 2021 and Creane, S. *et.al* 2022) that there are highly complex interconnected sediment transport pathways in the south-western Irish Sea and that Arklow Bank is a key component of two of these identified pathways. One of these pathways extends

beyond the eastern edge of the designated 'ZOI'. Chapter 6 provides no justification for omitting an analysis of this pathway. The applicant is requested to confirm if the proposed development is likely to impact these sediment transport pathways, and if so, examine the potential impacts on the sediment supply and distribution of Arklow Bank.

- c) The applicant is requested to provide detailed information on the calibration and validation of the hydrodynamic and wave models used in Chapter 6 of the EIAR and Appendix 6.1, to facilitate the verification of the findings. Several quality indices should be provided to measure how well the model data compares to the observed data. These quality indices include mean of x and y (MEAN), standard deviation (STD), mean difference (BIAS), absolute mean difference (AME), root-mean square error (RMSE), scatter index (SI), correlation coefficient (CC), and quantile-quantile (QQ) line slope and intercept. At a minimum, both scatter plot and time-series plots of the comparison between observed and model data should be presented. Minimum variables presented should include current speed, current direction, water levels, significant wave height, peak wave period, and mean wave direction. The location, time-period, and time-step of the observed datasets should be clearly stated. Detailed set-up of the models is requested, as well as justification for the modelling resolution used.
- d) The Board requests that existing baseline conditions should be clearly established by identifying, tidal currents, wind, wave, oceanographic and morphodynamics, sediment transport and associated coastal processes including erosion and consider the interactions of the combination of these processes (including the combined effects of tidal, wind and wave blockage). This approach should also be used in assessing the future 'do nothing' scenario in relation to the proposed development, which is requested. The combined effects of tidal, wind and wave blockage should also be assessed in establishing the baseline.
- e) The assessment of the impact of the proposed project on baseline seabed morphology, sediment transport and associated coastal processes in Chapter 6 of the EIAR is inadequate. Chapter 6 and Appendix 6.1 fails to adequately assess

the impact of the proposed development on tidal, current, wind, wave and sediment transport processes, and on the overall morphodynamic system in the wider area, including Glassgorman and Seven Fathom sandbanks.

- i. A more comprehensive model analysing the interactions between these factors is requested and over longer time horizons and compared with the non-developed scenario for the same time period.

Given the highly dynamic nature of the region, due to strong hydrodynamic currents, the Board considers that a 3D modelling approach should be provided to fully comprehend sediment transport and morphodynamics in the region. This involves the dynamic coupling of hydrodynamic flow, spectral wave and sediment transport models. This modelling work should provide a baseline understanding of sediment transport in the region and simulations of the impact from the proposed development of introducing structures (e.g. wind turbines, cable scour protection, etc.) into the environment on resuspension, accretion, erosion rates, and changes to the form and function of the Bank as a coastal protector.

The modelling requested should include all proposed infrastructure (including dimensions) for the full period they are in place. Should modelling not incorporate specific infrastructural elements, comprehensive justification for exclusion should be provided. Modelling provided should include justification of the construction equipment/methodologies used in the modelling and ensure appropriate environmental conditions (e.g. depth, bed friction/bed shear stress values), relevant construction equipment specifications and proposed operational infrastructure are incorporated. The impact of the decommissioned infrastructure on the baseline environment should also be assessed.

Detailed set-up of the models is requested. Validation of the sediment transport/morphological aspects of the model should be presented. Justification for the modelling resolution used is also requested. The modelling of Arklow Bank and surrounding area should cover the full

lifetime of the proposed project (operational plus decommissioning i.e., 40+ years) and consider extreme events (including 10%, 5%, 2%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) events). The applicant should justify the duration of model runs. The method of the estimation/selection of extreme events e.g., joint probability analysis, should be clearly presented.

- ii. The applicant is requested to provide further detailed information in this regard, including a slope stability analysis of Arklow Bank. The modelling scope should have the ability to capture slope dynamics across the Sandbank over the lifetime of the project. The Board requests cross-sectional analysis of modelled bathymetries across the Bank at each turbine location, alongside a discussion on how the proposed development (operational plus decommissioning) may impact the bank's baseline form and function in the context of the wider sediment transport system. A monitoring plan is also requested incorporating geophysical surveying techniques.
- iii. In addition, the applicant is requested to examine potential significant secondary scouring impacts from the proposed scour protection measures.

All results should be illustrated on appropriately scaled drawings/maps. Heatmaps of percentage change relative to baseline should be provided, where appropriate.

f) In terms of Particle Tracking Modelling:

- i. The response to be provided should include information on sediment type and source in each scenario assessed under the 'Impact 1 – Increased suspended sediment concentrations and associated deposition' in Chapter 6. Furthermore, there appears to be no overall EIA significance assessment for the Blackwater Bank SAC as a result of Impact 1 in Chapter 6.

- ii. Appendix 6.1 states that 're-erosion of settled material is conservatively not considered, to ensure the maximum depth of deposition is determined'. A sensitivity study should be provided to show the impact of including/not including this aspect in the modelling study. By not allowing re-suspension to occur in the model, there is a concern that this may influence the maximum extent of particle dispersion and accurate far-field fate determination. The results should be clearly presented on appropriately scaled drawings/maps. The results of this sensitivity analysis should be used to inform the design of the modelling work and to further inform the designation of the ZOI boundary locations.
- iii. Appendix 6.1 states 'the model is allowed to run for at least a further 48 hours to allow the far-field fate of the material to be ascertained. This time period allows all material to settle out from suspension'. No sensitivity analysis has been undertaken and no justification has been provided for the selection of this 48-hour timeframe. A sensitivity analysis for the far-field fate of different material types is requested for this region. The results should be clearly presented on appropriately scaled drawings/maps. The results of this sensitivity analysis should further inform both particle tracking modelling and the designation of the ZOI boundary locations.
- iv. There is a lack of representation of waves in all particle tracking modelling work. The coupling of tidal currents and waves in this modelling work is critical to assess the impacts on sediment transport and deposition, including impacts on the nearshore/coastal area.
- v. To this end, the applicant is requested to carry out more comprehensive modelling to include all proposed constructions, operation and, where possible decommissioning activities, and all infrastructure that would contribute to the specific pressures being modelled. Revised modelling should be undertaken to simulate entire campaigns in terms of construction and operational requirements of the proposed development such as dredging, disposal, cable laying and WTG (wind turbine generator)

installation, and not just in relation to select activities and/or representative locations. Modelling, data and spatial mapping should be comprehensive and include *inter alia* flocculation of the finer particles, suspended solids, deposition, dumping and disposal mounds. The modelling requested should include all proposed infrastructure (including dimensions) for the full period they are in place, should modelling not incorporate specific infrastructural elements comprehensive justification for exclusion should be provided. Modelling provided should include justification of the construction equipment/methodologies used in the modelling and ensure appropriate environmental conditions (e.g., depth, bed friction/bed shear stress values), relevant construction equipment specifications and proposed operational infrastructure are incorporated. The applicant is requested to justify the duration of model runs and consideration of extreme events, or others that are considered appropriate on the basis of model results.

vi. The applicant is requested to provide the following:

1. Statistical maximum for sediment deposition depths (cm) and suspended sediment concentration (mg/l) across the model domain for the entire construction campaign presented in the form of heatmaps. This should include heatmaps of predicted percentage change relative to the baseline across the relevant key temporal periods. The applicant should confirm that the modelling used reflects the baseline conditions in terms of the modelled particle size used, i.e., the modelling should be aligned to known baseline conditions. These heatmaps and other relevant model outputs should be used to inform any further ecosystem and cumulative assessments such as smothering or impaired foraging within the relevant sections of an updated EIAR.
2. Similar to above, the sediment deposition depths and suspended sediment concentration across the model domain for the entire operational campaign should be presented as heat maps of the

percentage change relative to baseline and used to inform relevant EIAR ecosystem and cumulative assessments.

3. Results should be illustrated on appropriately scaled drawings/maps and be provided in GIS format. (See Appendix A: Technical Details.)
- g) The applicant is requested to provide a comprehensive wind-wake analysis to examine potential impacts on wave generation and propagation, and potential impacts on sediment transport above the HWM (High Water Mark) including: the sand dune SACs, potential impact on ABWP1 (Arklow Bank Wind Park 1) (should it not be decommissioned) and Irish Sea ORE Phase 1 projects, and the cumulative impact on sensitive receptors. This analysis should also be used to confirm if the proposed development is likely to impact downstream meteorological conditions. The analysis should consider the full array layout of the proposed development, all wind directional sectors relevant to the site, and both normal and extreme conditions (10%, 5%, 2%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) events). All results should be illustrated on appropriately scaled drawings/maps, including contour/heatmaps displaying characteristics of the wind wake for each scenario. Results of this analysis should directly inform wave-blocking, tidal-blocking and coastal erosion/shoreline change modelling work. Furthermore, the results should be used to respond to Observers concerns in relation to wind wake, specifically impacts on leisure craft, the Annual Energy Production of ABWP1, sediment mobility and deposition, and downstream meteorological conditions.
- h) Chapter 6 states that there is no evidence to show a link between Arklow Bank and the coastline in relation to sediment source or sink. However, it is highlighted that waves break at Arklow Bank, thus reducing the power of the wave energy on the coastline. This implies that any change in the form and function of the natural processes on the Bank could impact the coastline from this aspect. This is not incorporated into the 'wave-blocking scenario' or any other presented scenario.

- i. The applicant is requested to demonstrate how potential changes from the proposed development to the form and function of the Sandbank's natural processes may impact the wave-blocking scenario. The results of the morphological modelling study should be incorporated into the wave-blocking scenario where appropriate. Extreme events should be modelled, including 10%, 5%, 2%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) events. Heatmaps of percentage change relative to baseline should be provided where appropriate.
 - ii. The applicant is requested to provide detailed information that underpins the model set-up and model validation for wave blocking to facilitate the verification of the findings.
 - iii. It is also requested to provide a phase-resolve modelling technique to accurately represent wave dynamics in this scenario. The applicant is requested to provide justification for the approach adopted.
- i) Following the above analysis, the applicant is requested to provide a coastal erosion/shoreline dynamics assessment. This should assess any potential impacts on nearby European Sites. This assessment should also include the following:
- 1) Coastal Erosion Assessment – Desktop Study of Historical Coastlines.
 - i. Utilise historical shoreline observational datasets e.g., aerial photographs and drone survey outputs, to characterise historical shoreline changes and coastal erosion/sediment accretion patterns. Resulting rates of shoreline change should be illustrated on appropriately scaled drawings/maps. Confidence bands should be provided where appropriate.
 - 2) Coastal Erosion Assessment – Modelling Study of Future Coastlines.
 - i. A coupled hydrodynamic, wave, sediment transport and shoreline morphology modelling approach should be adopted. Details of the

model set-up is requested. Before future predictive modelling is carried out, hindcast modelling should be completed to validate the model using historical shoreline datasets produced from the desktop study. Validation results should be clearly presented.

- ii. Predictive modelling should cover the lifetime of the Proposed Project i.e. 40+ years. Site-specific joint-probability analysis should be undertaken to select appropriate events for model scenarios. Extreme storm events should be assessed to the extent possible, including 10%, 5%, 2%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) events. Future cases considering the mid-range future scenario (MRFS), and high-end future scenario (HEFS) is requested.
 - iii. Predictive modelling of future coastlines under baseline natural processes is requested. Rates of shoreline change should be presented.
 - iv. Predictive modelling of the future coastlines with the inclusion of the proposed development should be carried out and compared against the baseline results to assess impact. All infrastructure of the proposed development should be included in this study, including landfall design. Should modelling not incorporate specific infrastructural elements, comprehensive justification for exclusion should be provided. All physical processes results from previous modelling work should feed into this piece of work e.g., wind-wake analysis, wave-blocking, tidal-blocking.
 - v. All results including changes to rate of shoreline change and changes to rate of sediment transport should be illustrated on appropriately scaled drawings/maps.
- j) The applicant is requested to provide clarification on the infrastructure size (turbine size, scour protection type, scour protection dimension (horizontal and vertical) that has been used in the 'sub-grid' model for tidal blocking. All proposed scour protection types and dimensions should be modelled to allow the Board to make an informed decision. A visual representation of the sub-grid model and infrastructure inclusion is requested. Extreme events should be modelled to the

extent possible, including 10%, 5%, 2%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) events. Heatmaps of percentage change relative to baseline should be provided where appropriate.

- k) The Board notes the concerns raised by Observers in relation to potential increases in flood risk due to changes in coastal processes as a result of the proposed development. The applicant is requested to provide a flood risk analysis to inform the likelihood of the proposed development increasing flood risk to sensitive coastal receptors.
- l) Further justification is requested as to why the impacts listed in 'Table 6.12: Impacts scoped out of the assessment for Coastal Processes' have been screened out.
- m) Reference is made to the following publications in Chapter 6 and associated Appendix 6.1:
- Fugro GB Marine, "Arklow Offshore Wind Farm Metocean Survey, Final Data Report", 2021.
 - MetOceanWorks, "Metocean Data Overview: Arklow Bank Offshore Wind Farm," MetOceanWorks, 2021.
 - MetOceanWorks, "Arklow Bank Wind Park Phase 2: Metocean Analysis for Site Assessment: Eastern Zone," MetOceanWorks, 2021.
 - Partrac, "Arklow Bank Wind Park Morphodynamic Study Interpretative Report", 2022.
 - Waterman Infrastructure & Environment Limited, "Arklow Bank Wind Park: LF2 Landfall Feasibility Study", 2022.
 - Sure Partners Ltd, "Field Operations and Preliminary Results Report (ISO Part 1) Arklow Bank Wind Park – Geotechnical Borehole Survey", 2022.

The applicant is requested to provide the Board with copies of the above publications.

- n) Chapter 6 states that the disposal site for the Trailing Suction Hopper Dredger (TSHD) load is located to the south of the array area. Appendix 6.1 makes

reference to a dump site approximately 24.4km in the southeastern corner of the array area. The applicant is requested to provide a map illustrating the location of the dumping-at-sea site in the context of the MAC boundary and red line boundary and provide a justification for the selection of this site. Furthermore, the applicant is requested to advise if only one dump site is envisaged to be required for all phases of the proposed development. The applicant is requested to ensure that the impacts associated with all the dumping-at-sea activities are appropriately assessed in the planning application documentation, notwithstanding that a dumping-at-sea licence may be sought for this activity.

- o) Both Wexford County Council and Observers have raised significant concerns in relation to potential impacts from the proposed development on coastal processes, in particular erosion of both natural (e.g. beaches and sand dunes) and man-made environments (e.g. coastal defences). Observers contend that should there be a need for a dumping-at-sea licence(s) during the operational phase of the development, there is risk of increase coastal erosion. The applicant is requested to address these concerns and provide further information and clarification on such matters.
- p) The Board notes the concerns raised by Wexford County Council and Observers in relation to the potential for the proposed development to negatively impact on water quality, thereby threatening the blue flag status of many beaches. Wexford County Council contends that there has been insufficient examination of identified contaminants moving as a result of piling and trenching and an overreliance on data from other projects that are not entirely relevant to the subject proposal. In particular, the Coastal Authority contends that there is insufficient modelling of impacts of potential heavy metal contaminants from proposed piling and trenching activities. Furthermore, concerns are raised in relation to accidental spills and any associated environmental damages.

Separately, the Board highlights that “Pre-Lay Inter-Array Cable Trenching at the Seabed” scenario outlined in Chapter 6 appears not to be included in the

assessment of “Deterioration in water quality due to suspension of sediments” (Impact 1) in Chapter 7 MW&SQ.

The applicant is requested to address these water quality concerns and provide further information and clarification on such matters.

- q) Any additional modelling in relation to coastal processes, which increase the existing significance of effect in that chapter and in interrelated chapters, ‘Chapter 6 Coastal Processes, and / or ‘Chapter 7 Marine Water and Sediment Quality’ to “Significant” or greater, will also require revised consideration as part of any updates in assessments associated with ‘Chapter 9 Benthic Subtidal and Intertidal Ecology’, ‘Chapter 10 Fish Shellfish and Sea Turtle Ecology’, ‘Chapter 11 Marine Mammals’, ‘Chapter 12 Offshore Ornithology’, ‘Chapter 18 Marine Archaeology and Cultural Heritage’ and also the NIS.

8. Benthic Habitats

- a) The applicant is requested to review and provide justification for the ZOI being considered (i.e. one tidal excursion) in Chapter 9, ‘Benthic Subtidal and Intertidal Ecology’, of the EIAR. The Board queries the adequacy of the ZOI, especially for dispersive pressures like re-suspended sediments. The ZOI should be informed by appropriate and comprehensive coastal processes modelling and sufficiently large to allow assessment of the full range of environmental impact scenarios that are reasonable to expect from this development and any potential overlapping sectors/activities. This is especially important given the relative proximity of protected features including Wicklow Reef SAC and Blackwater Bank SAC and, should also be used to support the Cumulative Impact Assessment.
- b) Further, the applicant is requested to provide justification for the difference between the Coastal Processes ZOI for the proposed development alone (two tidal excursions on a mean spring tide) (Chapter 6, Section 6.4.1.2) and the benthic subtidal ecology area (one tidal excursion) (Chapter 9, Section 9.4.1.1).

- c) Having regard to Point a, expansion of the ZOI to the east of the proposed development area may be required. This area was not considered in the planning application. Clear and strong justification is needed if a wider area for assessment is considered unnecessary.
- d) In respect of the benthic habitat surveys, Chapter 9 of the EIAR states “*Whilst the sampling methods were not identical across all surveys, these datasets provide benthic ecology data over a long time series and represent a robust characterisation of the benthic subtidal ecology assemblages*”. No justification/rationale has been provided to explain how/why methods were not consistent and what was measured/enumerated for baseline characterisation. The data presented is limited in scope, relying heavily on surveying undertaken in conjunction with ABWP1 as opposed to being bespoke to ABWP2, which covers a much larger area. Furthermore, it appears from Table 9.4 that no sampling was undertaken outside the array and cable corridor and working area to enable a better understanding of the baseline benthic environment in the wider area. This would provide better understanding of the potential impacts from the proposed development, especially on sensitive habitats including Wicklow Reef SAC and other areas that may contain Annex I habitat such as biogenic reef created by *Sabellaria alveolate*.

In light of the above, the applicant is requested to undertake further sampling. Two assessments are requested:

- i. Design and undertake a survey across the entire proposed development area (based on the outcome of Point a above) using appropriate survey tools (e.g. box cores or van Veen grabs) to describe the biodiversity of small epifauna and infauna and provide a full and comprehensive baseline characterisation of the reference condition to enable comparison with future surveys and assessment of potential impacts on benthic habitats; and
- ii. Design and undertake surveys in and around protected features including but not limited to Wicklow Reef SAC, with special focus on the presence/absence of subtidal Annex I habitat including biogenic reef created

by *Sabellaria species*. The Board highlights that in accordance with best practice, surveys should utilise non-destructive acoustic (e.g. side-scan sonar, Roxanne) and/or video tools (e.g. drop-cameras). Additional modelling tools such as habitat suitability modelling) and existing literature should be used to develop an appropriate survey design that specifically targets areas where occurrence is predicted.

- e) The Board considers that the desktop data referenced in Chapter 9 is not the most up-to-date. For example, Robinson et. al 2012 is referenced rather than Robinson et al. 2019. There is an over-reliance on specific literature (for example Atalah et al. 2013 and Keegan et al. 1987) which is not considered by the Board to be overly relevant to the proposed development having regard to the site's location and the limitations explicitly stated by the Authors of the referenced publications. The applicant is requested to review the most up-to-date published literature most relevant to the site and surrounding environment.
- f) The applicant states that the surveyed area is “species poor”, notwithstanding that 51 No. species were recorded (Appendix 9.1). The applicant is requested to confirm what the survey results are being compared with in order to draw this conclusion and justify why the area may in their view be ecologically unimportant.
- g) Sand wave clearance is predicted to result in deposition of 100-500mm over a distance of 1km at the dump site. The Board notes that Marine Evidence-based Sensitivity Assessment (MarESA) - Guidance Manual, February 2023 defines the deposition of up to 30cm of fine material to the seabed in a single discrete event to be ‘Heavy’. In this regard and in light of the Board's requests relating to coastal processes as outlined above in this Schedule, the applicant is requested to reassess the potential impacts from SSC and deposition on the IEFs identified in Chapter 9, particularly benthic Annex I habitats Reefs [1170] and Sandbanks [1110] in both statutory designated and undesignated areas.

- h) The Board notes that potential impacts from electromagnetic field (EMF) on benthic habitats has not been assessed. The applicant is requested to provide further analysis in this regard.
- i) The applicant is requested to consider whether or not potential significant impacts in the deterioration of water clarity due to the release of drilling mud may arise as a result of the proposed development.
- j) The applicant is requested to consider whether or not potential significant impacts from physical changes to the seabed from the use of construction vessels may arise as a result of the proposed development.
- k) The Board notes the extensive issues raised by Observers in relation to potential impacts on benthic habitats from the proposed development on Arklow Bank, Wicklow Reef SAC and Blackwater Banks SAC, in addition to habitats at Magherabeg Dunes SAC and Buckronev-Brittis Dunes SAC. The applicant is requested to respond to the matters in detail and provide further information and clarification, where relevant.

9. Marine Mammals

Underwater Noise – Mitigation and Noise Abatement

- a) The details that have been submitted in relation to underwater noise arising from the proposed development acknowledges the potential for impacts to arise on marine fauna from both Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) over significant areas. The Wildlife Act 1976, as amended, lists marine mammals, including all dolphin, porpoise, seal and whale species as protected (with subsequent regulations also applying protections to all species of marine turtles and similar protections to basking sharks), stating that it is an offence to hunt, injure, or wilfully interfere with/destroy the resting or breeding place of such species. The January 2014 National Parks and Wildlife Service (NPWS) 'Guidance to Manage the Risk to Marine Mammals from Man-Made Sound Sources' published by the Department of Arts, Heritage and the Gaeltacht

(NPWS (2014)), notes that sound sources with the potential to induce TTS in a receiving marine mammal has the potential to cause both disturbance and injury. This guidance has a statutory basis under Regulation 71 of [SI No. 477 of 2011](#), and refers to the “offence to injure” under the Wildlife Act, 1976, noting that TTS “may constitute such an injury”.

Having regard to the information submitted in the EIAR, the NPWS underwater noise guidelines (NPWS, 2014), the strict protections afforded to marine mammals under the Wildlife Act 1976, as amended, in addition to observations from prescribed bodies and observers, the Board requires a comprehensive suite of noise abatement measures to be submitted and assessed in addition to the existing mitigation measures referenced in the planning documentation. The applicant is requested to submit:

- i. A comprehensive review of relevant mitigation, in addition to what is currently contained in the submitted documentation, specifically appropriate noise abatement measures, which could be applied to the proposed development to reduce/restrict the propagation of noise through the marine environment and provide realistic values for the reduction in sound level possible from these technologies. The review must consider the range of suitable abatement measures available, including consideration of, at a minimum, bubble curtains, casings, resonators, and alternative hammer/piling technologies to reduce noise emissions, and set out in detail the suitability of such measures for the construction of the proposed development at this location, including restrictions in relation to their suitability, where relevant.
- ii. The applicant must also consider and draw on the best available technology and thresholds, including as applied in other EU jurisdictions (e.g. Germany; Belgium; Netherlands; Denmark), to identify and provide for suitable noise abatement to reduce the level and extent of potential noise impacts arising from the proposed development. Examples include the German 160 dB re 1 $\mu\text{Pa}^2\text{s}$ SELs and 190 dB re 1 μPa

SPL_{peak} thresholds that should not be exceeded at a distance of 750m from a piling site; or the frequency weighted SEL_{cum} PTS thresholds (e.g. harbour porpoise 155 dB re 1µPa2s) that should not be exceeded for a fleeing animal with a starting distance of 200m in Denmark.

iii. Revised noise modelling and mapping which provides detailed consideration of the noise abatement strategy selected in response to (i) above and include:

1. The modelled SPL_{peak} and SEL_{cum} PTS and TTS contours, for each functional hearing group potentially present, emanating from the existing five locations proposed in the application (listed in Table 3.1 of Appendix 11.1), which are at the periphery of the proposed development, to demonstrate the full potential spatial extent of underwater noise propagation. Modelling must also show the noise level (SPL_{peak}, SEL_{ss}) at 750m from the locations of each of the piling activities selection.
2. The modelled SEL_{ss} contours for 120-180 dB re 1µPa2s at 5 dB increments at the locations in the point above. Mapping provided must show the relevant noise contours in the context of implementing the abatement technologies/ measures identified at (1) above, and should be displayed alongside the noise contours in the absence of any such noise abatement measures being implemented.
3. Revised details showing the change in total impacted individuals of each species before and after consideration of noise abatement technologies.
4. Any additional abatement and / or mitigation measures should also be considered in the context of their potential for reduction of cumulative effects with other projects in terms of underwater noise.

b) The applicant is invited to submit any details of monitoring/reporting available from previous experience of offshore development in other EU jurisdictions which

demonstrates the efficacy of mitigation measures adopted in relation to underwater noise.

Surveying

c) With reference to the *Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects Part 2*, April 2018, by the Department of Communications Climate Action and Environment (DCCAE) (DCCAE (2018) Guidance), the applicant is requested to justify:

- i. The selection of a 4km buffer area extending around the array area for marine mammals and basking sharks. The DCCAE recommends a minimum buffer of 10 km for cetaceans, seals and basking sharks, with monthly haul-out site surveys for seals.
- ii. The limited presentation of empirical acoustic data (25 days of a static data logger from 2002) for marine mammals, notwithstanding that other types of surveys have been conducted, including visual boat-based surveys and digital aerial surveys. Please refer to the DAU (Development Applications Unit) observation which states that the omission of acoustic monitoring does not allow the site to be fully characterised for all marine mammal species.
- iii. The lack of any vantage point surveys at the cable landfall.

d) The applicant is requested to confirm whether any on-going or additional surveying has been carried out on the site in relation to mobile species since the application was lodged. If so, the applicant is invited to submit any further survey data results and incorporate these into the assessments within the application documentation as appropriate.

Modelling

e) Chapter 11 of the EIAR and Appendix 11.1: Underwater Noise Modelling Report considers underwater construction noise impacts. The applicant is requested to

confirm if Ultra-short Baseline (USBL) positioning systems will be used during pre-construction surveys. If so, the applicant is requested to include these systems in the assessment.

- f) Chapter 11 implies that PTS from piling will not be significant on low frequency mammals. The analysis presented implies that there is a minor overlap in the hearing range frequency in which low frequency animals (such as minke whale (7Hz-35kHz)) can hear, implied PTS range for such species (2kHz-10kHz), and the projected piling peak frequency range (20Hz-3kHz). It is considered that there is insufficient evidence provided to adequately demonstrate the extent of potential PTS from piling on low frequency animals, particularly minke whales and seals. The applicant is requested to provide further analysis in this regard.
- g) The Board notes the DAU's concerns in relation to the use of all available scientific data when assessing abundance/count and density estimates for pinniped species. Furthermore, it is advised that pinniped life history should be taken into consideration when using such data. The applicant is requested to use the most up-to-date NPWS seal data and DCCAE (2018) Guidance in addressing the DAU concerns.
- h) The applicant is requested to provide supporting reference/s for the following statements in Chapter 11:
 - i. Claims that Risso's dolphins have low sensitivity to underwater noise.
 - ii. Claims that minke whales can "tolerate temporary displacement from foraging areas due to their large size and capacity for energy storage".

In addition, further justification is requested to support the assumptions regarding potential seismic impacts on seals. References to a paper on seismic impacts on harbour porpoise (Kastelein et al, 2017) is not considered relevant.

- i) Reference is made to the following publications in Chapter 11 of the EIAR:
 - Annex IV Species Risk Assessment, RPS 2023.

- Arklow Geophysical and Geotechnical Surveys Subsea Noise Assessment, Seiche Ltd, 2022.

The applicant is requested to provide the Board with copies of the above documentation.

- j) With respect to the disturbance data, the worst-case number of piling events does not account for contingency of having to move and re-pile if substrate does not accept the pile. The applicant is requested to give consideration to this or justify its exclusion from the worst-case scenario.
- k) The applicant is requested to more clearly define the methodology for the dose-response assessment. The studies on which the dose-response assessment is based (Graham, 2017a; 2019) are explained in detail, however the process of applying the dose-response curve to density maps to determine the number of individuals disturbed is not clearly elaborated upon (e.g. description of density calculation within each threshold and summing). The applicant is requested to address this issue.
- l) The Board notes the use of NOAA Level B Harassment Threshold (National Marine Fisheries Service, USA) for the assessment of behavioural disturbance rather than more recently defined thresholds in European jurisdictions (e.g. Danish threshold of 143 dB re 1 μ Pa (or 103 dB re 1 μ Pa VHF-weighted) single strike sound exposure level (SEL_{ss}) (Tougaard, 2021). The Board further notes the threshold values recommended by TG Noise (Sigray *et al.*, 2023) and thresholds used in Ireland's Draft Marine Strategy Part 1, Articles 8, 9 and 10 report 2024 and its Annex III. The applicant is requested to discuss these thresholds and justify why they have not been used in the assessment.
- m) Insufficient information has been provided (see Section 11.9.1.2 of the EIAR) as to why injury and/or disturbance to marine mammals from dredging and trenching including the use of TSHD (during all phases of the project) has been scoped out from detailed assessment. The applicant is requested to fully assess the impacts on marine mammals from trenching and dredging (including TSHD) both in the

construction and operational phases, and to outline what measures, if necessary, are proposed to mitigate the impacts of same, in accordance with the NPWS (2014) Guidance.

- n) The applicant is requested to provide a detailed assessment of disturbance from operational turbines on marine mammals. The reference to Stober and Thomsen (2021), which suggests that a modern 10 MW turbine would disturb marine mammals out to 1.4km from the operating turbine, seems at odds with the claim of the 120m disturbance zone claimed for a 16MW or 17MW turbine. This further then calls into question the assessment that the combined noise effect of all turbines can be determined to be negligible without further examination. The applicant is requested to address this.
- o) With respect to the risk of collisions between marine mammals and vessels, the applicant is requested to incorporate all data relevant to Irish waters e.g. those reported in Irish Whale and Dolphin Group Cetacean Stranding Schemes and Irish Whale & Dolphin Group Deep Diving and Rare Species Investigation Programme. The applicant is requested incorporate the findings of these data sources into the submitted documentation.
- p) The Board notes that potential impacts from an increased concentration of suspended sediments on marine mammals has been scoped out from assessment in Chapter 11. In light of the Board's requests in relation to coastal processes as outlined above, the applicant is requested to reconsider the potential impacts from increased concentration of suspended sediments on marine mammals.
- q) The applicant is requested to provide a more detailed examination of the impacts in the NIS and AA Screening from the proposed development for harbour porpoise, a qualifying interest, associated with the following European Sites: Lambay Island SAC (Site code: 000204), Kenmare River SAC (Site code: 002158), Belgica Mound SAC (Site code: 002327), Carnsore Point SAC (Site code: 002269) and Gweedore Bay and Islands SAC (Site code: 001141) and Lough Swilly SAC (Site code: 002287).

Mitigation and Monitoring

- r) The applicant is requested to provide further information and reasoning/justification on the proposed use of ADDs (Acoustic Deterrent Devices) including: detail of construction activities where it will be relied on (piling, UXO (Unexploded Ordnance) clearance, etc.), ADD model or type, data on source level, frequency, PTS and TTS ranges, duration and plan of use, etc. Studies analysing their efficacy ranges for the marine mammals and megafauna should also be included. In addition, the use of such measures should be incorporated into the underwater noise modelling analysis to demonstrate their mitigation efficiency for each of the relevant receptors.
- s) The applicant is advised to update the Marine Mammal Mitigation Protocol (MMMP) to include reference to TTS, as this may constitute injury under Irish legislation and guidance.
- t) The MMMP (Appendix 25.2 of EIAR) states the development will follow standard *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters*, January 2014 (NPWS (2014) Guidance), however it describes the use of Passive Acoustic Monitoring (PAM) as a form of mitigation under hours of darkness. The guidelines state: 'Pile driving activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where effective visual monitoring, as determined by the MMO, is not possible the sound-producing activities shall be postponed until effective visual monitoring is possible'. The following text is also noted: 'Once an appropriate and effective Ramp-Up Procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 1,000m radial distance of the sound source, i.e., within the Monitored Zone'. According to standard practice, there is no requirement for piling to stop once daylight fades, however if there is a break in pile driving sound output for a period greater than 10 minutes (e.g. due to equipment failure, shut-down or location change), the piling should not resume until daylight hours. Although the proposed development will

be able to employ PAM to aid in identifying the presence of cetaceans, to begin before daybreak would currently constitute a deviation from the NPWS (2014) Guidance. As per NPWS (2014) guidance, PAM may be used as a supplementary mitigation tool in order to optimise marine mammal detection, but not as a primary mitigation tool. The applicant is requested to clarify the relevant mitigation measures to be utilised.

It is requested that all elements of the MMMP comply with the NPWS (2014) Guidance including: soft start times, delay durations, mitigation zone sizes, that ramp-up is always a requirement and the defined reporting requirements. Furthermore, the use of distance estimation formula should follow the same approach suggested for distance estimation by the Joint Nature Conservation Committee (JNCC) (refer to Marine Mammal Observer Association article on the subject of distance estimation using reticular binoculars for further explanation) and use standard trigonometric equations for calculation.

- u) Having regard to the NPWS (2014) Guidance, the applicant is requested to provide a detailed justification for the 500m MMMZ (Marine Mammal Mitigation Zone) (Table 25.2.3 in the MMMP), acknowledging that the results of the underwater noise assessment on marine mammals indicate impacts (TTS) may be experienced beyond 500m.
- v) The applicant is requested to address the possibility for temporal mitigation, for example limiting piling to periods that do not overlap with the harbour or grey seal pupping season or the harbour porpoise calving season, to further limit effects on nearby SACs.
- w) The Board notes that Chapter 8 Airbourne Noise makes reference to the use of mitigation measures including screens and dollys. However, there appears to be no reference to such mitigation measures in the underwater noise monitoring assessment (Appendix 11.1). The applicant is requested to clarify what noise mitigation measures (and their efficiency) are proposed to be relied upon in both

the construction and operational phases of the proposed development to mitigate both airborne and underwater noise impacts, respectively.

Cumulative

- x) Noting that the Irish Sea Phase 1 ORE projects are independent of one another, the applicant is requested to provide further information regarding the piling schedule outlined in Chapter 11 of the EIAR and Appendix 11.3 to provide a more comprehensive assessment of potential adverse effects of cumulative noise (airborne and underwater) from concurrent pile driving across the Phase 1 ORE projects in the Irish Sea.
- y) The applicant is requested to map maximum masking and behaviour impacts in the cumulative noise impact assessment on marine mammals, and fish and behavioural impacts for shellfish. The cumulative assessment should model impacts based on concurrent construction with and without noise abatement with at least one other windfarm in the Irish Sea. Critical periods of breeding and spawning should be identified and if these are associated with any known vocalisations.
- z) Notwithstanding the rationale provided in relation to the assessment of impacts of operational underwater noise on marine megafauna, the applicant is requested to assess potential impacts from operational underwater noise on marine mammals in terms of the cumulative assessment with other Irish Sea ORE Phase 1 projects.
- aa) The Board notes that the dredging of Wicklow harbour (FS007583) has not been included as part of the cumulative assessment of the proposed development on marine mammals. The applicant is requested to up-date the assessment to incorporate this activity.

10. Fish, Shellfish and Sea Turtle Ecology

- a) The baseline characterisation is heavily reliant on old, published data (for example Parker & Humphreys, 2004). The inclusion of up-to-date groundfish survey data (GFS) is key to the robustness of the baseline characterisation as this is an

independent long-term dataset co-ordinated under the International Bottom Trawl Survey (IBTS) programme. However, in the EIAR, this dataset does not appear to have been referenced beyond 2001 (see Appendix 10.1, section 4.1.2, second paragraph, second last sentence). The applicant is requested to clarify what tows or ICES rectangles were reviewed from this dataset and over what timeframe. In addition, the applicant is requested to clarify how many, and where, tow stations were sampled each year in the ABWP1 post construction surveys, and how the results of same have been incorporated into the baseline characterisation for the proposed development. The applicant is also requested to have regard to the Marine Institutes' Irish Coastal Ecosystem Survey (ICEco).

- b) The Board notes that not all rivers of diadromous species have been considered (for example Avoca, Boyne, Dargle and Slayney have been considered). The applicant is requested to provide justification for not including all rivers with diadromous species along the east coast of Ireland.
- c) Observers have raised concerns regarding the potential impact from the proposed development during the construction phase on salmon and sea trout in rivers running to the sea next to the Arklow sandbank. The applicant is requested to address these concerns, particularly with regard to salmon and the Avoca River, and provide further information and clarification on such matters.
- d) The methodology for inclusion of river SACs is unclear. The methodology states that only SACs within the Western Irish Sea Study Area have been assessed, however the Barrow, Nore and Suir have been included despite lying outside of the study area. The Board notes that the Munster Blackwater has not been considered. The applicant is requested to provide further details and justification with regards to the methodology adopted.
- e) The Board notes the concerns raised by the Loughs Agency and the Isle of Man in relation to the proposed development and its potential impacts on fish. The Loughs Agency suggest that consideration is given to carrying out a thorough baseline survey to monitor migration movements of salmonids and other highly

mobile species in this area through an acoustic telemetry programme and hydrodynamic modelling. In addition, it is advised that monitoring should continue throughout the construction, operational and decommissioning phases of the wind farm. The applicant is requested to address the above points and provide further information and clarification on such matters.

- f) As highlighted in the Marine Institute's observation, the Irish Sea holds important nursery grounds for a variety of rays (including blonde ray). However, Chapter 10 has focussed largely on the spawning grounds of only two ray species (spotted ray and thornback ray) as identified in Coull *et al.*, 1998 and Ellis *et al.*, 2012. Furthermore, Blonde ray was not identified as an IEF (Important Ecological Feature) despite being an important component of the fish assemblage in the Irish Sea and having been identified for inclusion in the Irish Sea Sensitivity Analysis. The applicant is requested to provide further analysis with respect to potential impacts from the proposed development on this species.
- g) Chapter 10 analyses Common Whelk's sensitivity based on that from dog whelk, a smaller, intertidal species. It is assumed that there is greater recoverability for Common Whelk due to its larger size, however the research to support such an assumption has not been presented. The applicant is requested to reassess Common Whelks' adaptability/recoverability with regard to the most up-to-date published research, the 'stocklet' structure in the Irish Sea, and evidence of poor recovery following over-fishing in other jurisdictions. With respect to Impact 1 – Temporary habitat loss/disturbance and Impact 6 - Long term habitat loss as a result of the presence of foundation structures, scour protection and cable protection in Chapter 10, the applicant is requested to reconsider increasing the sensitivity of benthic species to 'High' for these impacts having regard to MarESA sensitivity assessments for 'Physical Loss' and 'Physical Change'.

Furthermore, Chapter 10 considers Whelk to be of regional importance, however, the Irish Sea whelk fishery is the largest whelk fishery in the country. The applicant is requested to give further consideration to this species in this respect.

- h) Dredging of Wicklow harbour (FS007583) and Arklow (FS006715) has not been included as part of the cumulative assessment of the proposed development on fish and shellfish. The applicant is requested to up-date the assessment to include these projects accordingly.
- i) Furthermore, the applicant is requested to strengthen relevant cross references to the Commercial Fisheries and Aquaculture Chapter 14 within Chapter 10, to support assessment conclusions and to direct the reader as appropriate. For example, the Board notes that Chapter 10 makes reference to UK landings data, but there appears to be no reference to Irish landing data. However, Chapter 14 Commercial Fisheries and Aquaculture does make reference to Irish landing data. Furthermore, the applicant is requested to address the Isle of Man's queries with respect to why study areas between these two Chapters does not correspond to ICES statistical rectangles boxes.
- j) The Board considers that Appendix 11.3 provides insufficient justification as to why disturbance to fish, basking shark and sea turtles from underwater noise generated by wind turbines during the operational phase of the proposed development has been scoped out for assessment in Chapter 10. The applicant is requested to provide further justification in this regard.
- k) In terms of Appropriate Assessment (AA), and in light of the questions raised above, it should be ensured that appropriate consideration is given to potential impacts on the designated features of sites that may be affected by impacts to fish and shellfish ecology (i.e. marine mammals and ornithological features). Many fish species, including herring and sand eel, form key prey items for birds and marine mammals which may be QIs of designated sites within the applicable assessment area. Therefore, a comprehensive assessment of fish and shellfish ecology within the EIA should be ensured to confidently discount potential impacts to Natura 2000 sites designated for QIs that rely on fish and shellfish as prey items.

11. Commercial Fisheries and Aquaculture

- a) The NMPF provides that the proposed development should be considered in the context of co-existences with existing marine activities in the area, including fisheries and aquaculture. The Board notes that Moderate adverse (significant) impacts are anticipated from the Displacement of Fishing Activity into Other Areas for potting fishery (Impact 3 in Chapter 14 Commercial Fisheries and Aquaculture) when the proposed development is considered cumulatively with other Irish Sea Phase 1 ORE projects.

Having regard to the provisions of the NMPF, the submitted EIAR (including the Fisheries Management and Mitigation Strategy, Appendix 16.2), and all observations made:

- i. The applicant is requested to address observations by prescribed bodies and observers who raise concerns in relation to the potential impacts on commercial fishing arising from the proposed development within both the array and the cable route corridor areas, specifically relating to the practicality and uncertainties of co-existence with reference to Co-existence Policy 1 in the NMPF.
- ii. The applicant is requested to address observations by prescribed bodies and observers who raise concerns in relation to the displacement of fishing effort during operational activities. In particular, the Marine Institute submit that the displacement of fishing effort would potentially increase fishing pressure and competition in neighbouring areas and have an impact on smaller vessels which cannot travel beyond their main area of activity. The applicant is requested to consider, in a holistic and integrated manner, cumulative impacts (see also point 5 above) associated with the potential effects of such displacement of fishing effort associated with other Irish Sea Phase 1 ORE projects in this area.

- b) Chapter 14 states that the closest aquaculture site is located 5.5km from the closest point of the cable corridor and working area. Section 14.7.2.2 states that “Potential impacts related to exclusion and impacts on the commercial resource are assessed for aquaculture; all other impacts are scoped out as there is not an impact pathway for the aquaculture receptor.”

The Marine Institute states that the closest licensed aquaculture site is approximately 1.8km to the south of the proposed lease area. It is advised that the impact of construction and maintenance activities on water quality and sedimentation in aquaculture sites should be considered.

The applicant is requested to confirm what the distance is between the closest aquaculture site and the cable corridor and working area and array area. In addition, the applicant is requested to address the Marine Institute’s comments regarding impacts of construction and maintenance activities on water quality and sedimentation on aquaculture.

12. Offshore Ornithology

Baseline Environment and Data

- a) **Desktop Analysis**: The Board notes that Observe aerial seabird data (2015-2016) was used as part of the desktop analysis for Chapter 12 and the NIS. The applicant is requested to review the results of Observe Phase II and update the Chapter 12 and NIS, where relevant. In addition, the recent results from Burnell *et al.* (2023) ‘*Seabirds Count: A census of breeding seabirds in Britain and Ireland*’ (2015-2021) (co-produced by JNCC, RSPB, BirdWatch Ireland, the National Parks and Wildlife Service (Ireland) and 19 further partners) should be incorporated into the analysis where appropriate (e.g. baseline population sizes, trends and colony population estimates).
- b) **Regional Breeding Population**: The robustness of population calculations used within Chapter 12 Offshore ornithology, and associated appendices, is important in assessing the potential effects of the proposed development. The Board notes that the EIAR (Chapter 12, section 12.5.2.12) presents two methods for estimating

the breeding season populations against which impacts are assessed in the EIAR, and that one of these methods involves two alternate approaches to estimating the associated number of immature birds. It is not clear from the application documents how these alternate methods have then been applied in calculating the breeding season populations.

- i. The applicant is requested to provide further detail and evidence-based justification for the method applied, which should comprise the most appropriate and precautionary method for estimating the breeding season populations to inform assessment conclusions.
 - ii. The applicant is requested to clearly present the values and equations used to derive the population estimates, including their sources (e.g. a list of colonies or sites included within the reference populations), to allow validation of the methodology. The applicant should also address this issue in the Cumulative Impact Assessment.
- c) **Black-legged Kittiwake:** The Board notes that the DAU has raised concerns in relation to the potential impact on the Black-legged Kittiwake (hereafter Kittiwake) population, a QI of Wicklow Head SPA (site code: 004127), particularly in relation to displacement and collision risk impacts. Notwithstanding that displacement impacts have been scoped out for Kittiwake colonies (see below), it is noted that the background rate of mortality for the species is anticipated to increase by 2.5%-2.8% per annum as a result of the proposed development due to collision risk alone. The DAU recommends that further information be provided to identify and evaluate the impact of displacement of Kittiwake in conjunction with collision risk and that the potential for significant impacts be fully addressed in revised documentation. In this regard, the DAU makes reference to Nature Scot which advises that for species where both collision risk and displacement are considered (e.g. Northern Gannet, Kittiwake), that these impacts should be considered as additive. It is further recommended that the PVA (population viability analysis) model is based on the previous five years productivity value, rather than over the last 22 years.

In addition, the DAU raises concerns with regards to the assumption that the Wicklow Head SPA population would have to rely on immigration of Kittiwake from elsewhere to compensate for the predicted mortalities that may be caused by the proposed development. No empirical data has been provided to support this assumption.

As noted above, Kittiwake was screened out for displacement effects in Chapter 12 of the EIAR and NIS. Given the variable effects of offshore wind farms on the species, the proximity of the proposed array area to the nearby colony at Wicklow Head SPA and the fact that in Scottish and Welsh waters Kittiwake are typically not screened out (and where up to a 3% mortality rate and 30% displacement rate is applied), it is not considered appropriate to screen this species out for displacement effect assessment.

The applicant is requested to address the DAU concerns in relation to Kittiwake, particularly having regard to Wicklow Head SPA conservation objective to “**restore** the Favourable Conservation condition” of the species. Given the close proximity of the Wicklow Head SPA colony and the proposed array area, a more thorough assessment of the potential impacts is needed to ensure or mitigate against the potential negative impacts on the population.

The assessment should include, at a minimum:

- I. A re-examination of the displacement impact on Kittiwake using a 30% displacement rate. Mortality rates should be based on best available evidence, but with a range of rates presented, from 1% to 3%, as advised by NatureScot (2023).
- II. An examination to identify and evaluate the impact of displacement of Kittiwake in conjunction with collision risk and the potential for significant impacts be fully addressed in revised documentation.
- III. Re-run the PVA model using the previous five years demographic parameters only.
- IV. Empirical evidence to support the assumption that the Wicklow Head SPA population could be expected to rely on immigration of Kittiwake from

elsewhere to compensate for the predicted mortalities that may be caused by the proposed development.

- d) **Red-throated Diver:** Red-throated Diver is a species known to be highly sensitive to Offshore Wind Farm (OWF) developments due to displacement effects. The Board note that for Red-throated Diver, best available evidence as presented in the Joint SNCB Interim Advice on the Treatment of Displacement for Red-Throated Diver (SNCB, 2022). This states that:

“For non-breeding red-throated diver, a pragmatic displacement buffer of at least 10km is recommended for use in site characterization, impact assessments and post-consent monitoring where a plan or project is within 10km of a Special Protection Area (SPA) designated for non-breeding red-throated diver. Where a plan or project is further than 10km from a SPA designated for non-breeding red-throated diver, a standard displacement buffer of 4km should continue to be used”.

As highlighted by the DAU, Red-Throated Diver is listed as a SCI of The Murrough SPA, which is located circa 8km from the northern extent of the proposed array area.

The applicant is requested to assess displacement of Red-throated Diver to a distance of at least 10 km from the proposed array area due to project infrastructure, having regard to recent best available evidence as presented in the UK Joint SNCB Interim Displacement Advice Note (SNCB, 2022) and update the EIAR and NIS accordingly.

- e) **Importance of Arklow Bank for locally scarce/rare species:** Survey results have demonstrated that the Arklow Bank is of high ornithological conservation value for a range of seabirds, including during the non-breeding (migration and overwintering). Many of the Observers highlight the importance of the Sandbank to seabird species. The applicant is requested to provide further information addressing the importance of the shallow seas of the Arklow Bank for locally scarce/rare species such as the Little Gull, in addition to a range of tern and auk species. These species occur in relatively high numbers in August/September

(terns and auks) and mid-winter (Little Gull). For the post-breeding period for auks and terns in August it seems likely that the relatively high densities include a combination of post-breeding adult birds and recently fledged young. Given the relative inexperience of recently fledged young terns the CRM (Collision Risk Model) has the potential to underestimate the impact.

The applicant is requested to provide a further analysis of the potential effects of the proposed development in relation to predicted mortalities from both collision and displacement impacts for relevant species. This should, at a minimum, include the Observe Phase II data. The Board considers that it would be of assistance for the applicant to consider providing distribution modelling and analysis of overlap between seabird populations, prey species / fisheries and the project. Graphical representation PVA results would also be of assistance to ensuring appropriate and comprehensive interpretation given the uncertainty in model outputs.

- f) **Migratory Waterbirds:** The EIAR and NIS makes little or no reference to migratory waterbirds in general. The DAU notes that a significant number of migratory waterbirds (in terms of species and absolute numbers) migrate to and from Ireland across the Irish Sea. The south-east region comprises a large number of internationally important wetlands including North Wicklow Coastal Marshes, Cahore, Wexford Harbour and Slobs, Tacumshin, Lady's Island and Ballyteigue which hold birds a large proportion of which, given their breeding ranges, migrate across the Irish Sea. These populations of waterfowl and waders originate from breeding areas largely to the East (continental Europe/Asia), North-East (Scandinavia) and North-West (Iceland). No information has been provided with respect to their migration patterns – including timings, flight altitudes, orientation and primary migration corridors.

The DAU observation raises concerns in relation to surveying of migratory waterbird species during key migration times (i.e. spring and autumn). It is stated that coastal vantage point surveys are insufficient and that reliance on published literature does not provide detailed or precise data movements. The DAU has concerns that the proposed development has the potential to have significant impacts upon migratory waterbirds and the Conservation Objectives of the SPAs

where they are listed. The DAU states that the applicant should have not only considered but implemented appropriate survey methodologies in order to detect and assess the level of bird migration through the proposed development area, working collaboratively with other Irish Sea ORE applicants.

The VP (vantage point) survey results submitted by the applicant have spatial limitations in terms of robustness and have not been used in quantifiable assessments. There is also limited information on flux or passage of birds through the proposed array area itself during migration (east-west and north-south).

Having reviewed all the information presented, the Board is of the view that impacts to migratory species has been insufficiently assessed. The applicant is requested to address the purported data gap to enable the assessment of potential impacts of the proposed development on migratory birds. Radar (horizontal and vertical surveys) (or similar) at the array area during peak migration periods should be utilised to provide site-specific data, which could be used to support the applicant's current assessment and provide quantitative information on the passage of birds to feed into collision modelling. Should radar not be conducted and an alternative survey methodology utilised, comprehensive justification for the alternative should be provided. Peak migration periods during which data are to be collected can be further informed through review of existing data and published literature relevant to the project area and region. Whilst the DAU makes reference to the key migration times being spring and autumn, the Board considers that migration information during the winter months would also be of assistance to the assessment (e.g. irruptive cold weather movements from the continent and UK). The applicant is invited to consider this aspect for inclusion also. The applicant should note reliance on literature to fill knowledge gaps, while useful, does not provide adequate data to ensure a comprehensive assessment of potential effects on birds.

- g) The Board notes that SPAs located greater than 50km from the proposed development are screened out for consideration, but more distant SPAs are reviewed under Cumulative Assessments in the NIS where there is potential connectivity between SCI (Special Conservation Interests) species at these SPAs

and the development area. The Board requests that these SPAs for which connectivity is known/likely, be included in the assessment of effects on the project alone. Alternatively, the applicant may provide a more comprehensive rationale for the selection of relevant SPAs for which impacts are being assessed, other than by distance-based metrics, which will overlook ecological (e.g. migratory) connectivity potential between various waterbird SPAs and the proposed development area.

- h) The applicant is requested to address the DAU concerns regarding why migratory waterbirds were not considered in the AA Screening Report.
- i) The applicant is requested to provide a collision risk model to inform the assessment of potential impacts of the proposed development specifically on migratory waterbirds. As stated by the DAU, the CRM for the NIS should give due consideration to the potential for significant effect upon the conservation objectives for migratory waterbirds in the relevant SPAs (e.g. upon the population attribute), rather than simply upon the total migratory population (as is the case within the EIAR CRM).
- j) **Terrestrial Bird Species:** The DAU consider there to be deficiencies in the assessment of land-based avifauna, with CRM data based on general assumptions and omission of migrant non-seabird species.

The DAU recommends additional data and consideration of survey/monitoring options such as: targeted deployment of passive acoustic devices at headlands and offshore nocturnal boat transects; review of available ringing/tracking data for migratory species and/or species which are known/likely to conduct staging/dispersal movements; and use of thermal imaging devices (hand-held/drone) surveys targeted at likely peak periods of passage.

The Board requests that further assessment is carried out regarding impacts on terrestrial bird species. The applicant is requested, having regard to the above comments to address the purported data gap and potential impacts of the proposed development on terrestrial birds.

- k) The applicant is requested to provide a more comprehensive justification as to why collision risk to migrating passerines was screened out from assessment.

- l) **Baseline Data Vintage:** The Board queries the age and relevance of the submitted aerial and boat-based survey data used in the application, in particular considering the 2022 Highly Pathogenic Avian Influenza (HPAI) season, which had significant negative impacts on a range of seabird species. The applicant is requested to provide justification that the original digital area surveys and boat-based data remains relevant and appropriate at the point of submitting additional information to support the proposed.

Impact Assessment and Methodology

- m) **Displacement and Mortality Methodology:** The Board notes that the applicant has assessed predicted annual mortalities for a number of species based on a single mortality rate, rather than the industry recommended range of mortality rates. For example, a mortality rate of 1% is used for Gannet (not 1-3%). Furthermore, while a displacement range is presented in numeric tables for certain species (e.g. Guillemot and Razorbill – 30-70%), the corresponding narrative only focuses on ‘evidence-based’ metrics of 50% for displacement and 1% for mortality. The applicant is requested to revise the EIAR and NIS to adopt a range of relevant mortality rates in the estimates of predicted mortalities for relevant species and update the discussion analysis accordingly.
- n) The applicant is requested to provide further justification for scoping out potential impacts from artificial lighting during the construction and operational phases of the project on all bird species.
- o) Any potential specific mitigation measures to minimise the effects of the project on birds, such as painting of turbine blades, the use of curtailment systems in particular conditions or at particular times etc, if considered appropriate, should also be included and addressed in the application documentation.

Cumulative and Transboundary Effects

- p) The potential cumulative effect of the proposed development in combination with AWBP1 does not appear to have been comprehensively considered in terms of both developments’ spatial footprint/density and their height differential (i.e. the three dimension space) on all bird species. The Board notes that ABWP1 is owned and operated by Arklow Energy Limited, and that it may not be decommissioned

by the time of construction and operation of the proposed development. The applicant is requested to provide a more comprehensive assessment of potential impacts on all bird species with a particular focus on both potential collision and displacement impacts, should ABWP1 not be decommissioned prior to the construction and operation of the proposed development.

- q) **Cumulative Effects Assessment (CEA)**: Impacts on birds in the CEA (Section 12.11 of Chapter 12) are presented and assessed against annual populations only (i.e. all seasons combined). The applicant is requested to revise the CEA to ensure impacts are presented and assessed against the breeding and non-breeding season populations separately.
- r) **Migratory Waterbird Species**: Migratory birds have not been included in the CEA presented in the application documentation. As stated previously (point f Migratory Birds and point j Terrestrial Birds) the Board has requested further assessment of the impact on migratory birds for the project, and further data to inform the assessment. The applicant is requested to assess cumulative impacts to migratory bird populations, considering effects of the Irish Sea Phase 1 ORE projects and other existing or currently proposed plans and projects that may affect the same migratory populations. The applicant is requested to update the application documentation, as required.

13. Bats

- a) Whilst the Board acknowledges that there is currently no accepted standard for the assessment of bat activity in relation to offshore wind energy developments, it is considered that the methodology outlined in Chapter 13 of the EIAR is insufficient, especially in comparison to the level of assessment that would be considered best practice for the assessment of onshore wind energy developments in Ireland.

It is noted that echolocation monitoring was carried out from only one location, which may not be representative of all areas within the array in terms of bat activity. The height of the detectors above sea level has not been provided. Furthermore, the extent to which night-time illumination at the 'monopile' was present is not

discussed, which may be relevant to more light sensitive species such as Daubenton's Bat.

No justification has been provided as to why other methods to establish the baseline characterisation of the site (for example boat-based monitoring) was not undertaken.

The applicant is requested to present a more comprehensive baseline for the assessment of potential impacts on bats that aligns more closely with the methodology for assessment of bats for onshore projects. Specifically, the applicant is requested to provide echolocation/activity data for the array area within active periods.

- b) The assessment of potential impacts on migratory bats is largely limited to two species: Nathusius Pipistrelle and Leisler's Bat, notwithstanding that other species such as Daubenton's Bat and Common Pipistrelle have been recorded offshore in the Irish Sea and North Sea. The applicant is requested to provide further justification in relation to the screening in and out of all bat species for each of the impacts assessed in Chapter 13 of the EIAR.
- c) Chapter 13 states that bat collision risk will be minimised as the lower blade tip height is 37m Lowest Astronomical Tide (LAT) and most bat activity occurs below 40m. However, as highlighted in the DAU observation, there is good evidence to demonstrate that Leisler's Bat regularly fly above 40m. Having regard to the most up-to-date academic literature, the Board notes that this may apply in relation to other bat species also.

The applicant is requested to provide further information with respect to the assumption made regarding flight height. Furthermore, consideration needs to be given to tidal range and its impact on this available gap between the swept area and water level in relation to bat collision risk.

- d) A lower average rate of rotation of the proposed offshore turbines versus onshore turbines is presented as a 'factored-in' measure that would reduce collision/barotrauma risk. The Board highlights that a lower rate of rotation does

not equal less speed at the rotating blade-tip when considering differently sized turbines. The applicant is requested to provide further clarification in relation to this 'factored-in' measure.

- e) Chapter 13 makes a number of references to 'optimisation strategies'. The applicant is requested to clarify specifically what these strategies are and how they are relied on to mitigate risks from the proposed development for bats.
- f) Section 13.8.3.22 puts forward an argument that Nathusius Pipistrelle may avoid lighting associated with offshore wind turbine generators (WTG) as a result of "avoidance behaviour due to optimisation strategies when performing long-distance migratory flights". However, the Board considers that insufficient evidence has been provided to demonstrate that an aversion to one potential stimuli (i.e. playbacks of bat vocalisations) would necessarily translate to an aversion to another potential stimuli (i.e. light). The applicant is requested to provide further information in this regard.
- g) With regard to artificial lighting at night, the applicant is requested to provide a more comprehensive assessment for the effects due to Artificial Lighting at Night (ALAN) and the extent to which it may displace bats. The applicant is requested to provide an assessment (with reference to appropriate lux contours) having regard to the Lighting and Marking Plan (Appendix 25.6) to determine the extent to which WTG and OSP lighting may disturb or displace bats.
- h) The DAU states that the impact of collision/barotrauma could be significant for both foraging bats and migrating bats (specifically migrating Nathusius Pipistrelle bats and Leisler's Bat). It is stated that a revised impact assessment should be used to inform the design of mitigation of significant impacts on bats. The applicant is requested to address these comments from the DAU and provide further information and clarification on such matters.
- i) The applicant is requested to examine mitigation measures in addition to monitoring during the operational phase to reduce potential impacts on bats (for example curtailment or feathering of blades under certain conditions).

Furthermore, the applicant is requested to provide more detailed information in relation to the proposed monitoring programme post-consent, if required.

- j) The Board notes that Section 13.8.5.10 makes reference to “the slower rotation speeds during optimal migration conditions”. The applicant is requested to clarify what is meant by this statement and if the proposed development includes for reducing the rotation speed of turbines during migration periods.

14. Seascape Landscape and Visual Impact

- a) The Board notes that while there is discussion in Chapter 17 regarding the relationship between terrestrial and marine areas and interactions across the land/sea interface, there is no visualisation of the impact of views from the sea. In addition, the Board notes that Chapter 17 states that Major (significant) visual effects will result for the majority of the Dublin-Cherbourg ferry route, from the proposed project alone and in combination with other projects. Whilst photomontages are provided for all other viewpoints, which are stated to have a Major (significant) impact, no photomontage has been provided for the Dublin-Cherbourg ferry route. The applicant is requested to provide a viewpoint along this route to clearly illustrate the significance of visual impact.
- b) The Board notes that there have been no photomontages prepared illustrating the cumulative impact of the proposed development the Codling ORE (ABP Ref. OA29N.320768). The assessment relies on a digitally rendered wireframe model only. The application for the Codling Farm (ABP-320768-24) has now been submitted to An Bord Pleanála and information in relation to this proposed development is publicly available. The applicant is requested to update the selected viewpoints to illustrate both developments, where relevant.
- c) The Board notes the summary provided in the Planning Report of the SLVIA, which concludes that while there will be significant effects on the character and views from the coast, there is scope for the proposed development to be accommodated at this location without unacceptable effects on seascape, landscape character and visual amenity. Furthermore, it is stated that the layout

has been designed to minimise the impacts where possible and having regard to the policy support, need and associated public benefit for the project, the proposal complies with CPOs 17.35 and 17.38 of the Wicklow County Development Plan. It is further stated that the proposal is compliant with CPO 19.8, which aims to protect the character and visual potential of the coast and conserve the character and quality of seascapes.

The Board notes that Fáilte Ireland queries whether sufficient consideration and assessment has been undertaken of potential alternatives and the full extent of environmental impacts has been given to locating such development at a greater distance from the highly sensitive coast/near-coast area.

The applicant is requested to outline what alternatives were examined with respect to reducing the visual impact of the proposal, if any, and clearly specify what measures (referred to in the Planning Report) have been undertaken to minimise the visual impact of the proposed development.

In addition, the Board considers that insufficient justification has been provided with respect to how the proposed development could be considered visually acceptable, noting the conclusions of the SLVIA. The applicant is requested to provide further justification in terms of the 'public benefit' for the proposed development and analysis of the proposal's compliance with CPOs 17.35, 17.38 and 19.8.

- d) The applicant is requested to clarify what, if anything, will be visible above ground at the landfall site when the development is complete. The applicant is requested to elaborate on proposed groundworks and landscaping works in this area, if any are proposed.

15. Population and Human Health

- a) The Board notes the concerns raised by Wexford County Council in relation to the applicability of the studies referenced in Chapter 21 regarding the potential impact

the proposed development will have on tourism and recreation. The coastal authority notes that the assessment largely focuses on onshore projects. It is contended that these studies are limited in understanding public perceptions of offshore wind farms, particularly given the scale and distinct nature of the current proposal. Accordingly, the applicant is requested to re-examine and provide a more comprehensive assessment of the potential impacts from the proposed development on the local economy and tourism, including visitor perceptions from a broad range of beaches along the east coast.

- b) The Board notes the concerns raised by Fáilte Ireland in respect of the subject application. The applicant is requested to provide further detail and justification in relation to the effects on tourism, having regard to the Fáilte Ireland observation.
- c) In the context of cultural heritage and visual amenity, the applicant is referred to the Marine Institute's Regional Seascape Character Assessment for Ireland 2020 which emphasises the importance of recognising an area's sense of place and identity. Furthermore, Chapter 17 of the EIAR highlights that there is a subtler transition between seascape and landscape and the importance of the interaction of sea, coastline and lands as perceived by people. The coastline's importance as a sense of place for recreational/leisure, therapeutic, commercial purposes etc. and its role in cultural identity is reflected through many of the observations submitted to the Board in respect of the proposed development. Having regard to the Regional Seascape Character Assessment for Ireland and observations, the applicant is requested to provide an analysis of the proposed development's potential impact on the coastal area's sense of place and cultural identity for local residents and tourists.
- d) The Board notes that unemployment and human health have been scoped out for assessment in Chapter 21 Population and Human Health. In light of concerns raised by observers, the applicant is requested to give further consideration to the potential impact on population mental health and wellbeing, particularly having regard the proposed development's significant visual impact.

16. Airbourne Noise

- a) The Board notes that a number of observers have raised concerns in relation to potential airborne noise impacts on sensitive receptors both during the construction and operational phases of the proposed development. The applicant is requested to directly address observers' concerns raised in relation to impact of airborne noise from WTGs, specifically in relation to verifying the source of the assumed SPL of the WTGs, details in relation to cut-in wind speed, cut out wind speed and sound power level data.

In addition, Wexford County Council has raised concerns in relation to airborne noise impacts, including queries regarding amplitude modulation. The applicant is requested to address WCC concerns and provide further information and clarification on such matters.

- b) The applicant is requested to provide a map illustrating the three representative piling locations that have been used to assess the noise impacts from piling activities (Section 8.6.6.2 of Chapter 8).
- c) The applicant is requested to clarify with reference to Table 8.10 in Chapter 8, why the results for the 'North and Centre' are grouped together, whilst the results for the South are provided independently?
- d) The Board notes that Chapter 8 does not assess potential noise impacts on NSRs from activities to be carried in the cable corridor and working area including the landfall works. The applicant is requested to examine these potential impacts and update the Chapter accordingly.
- e) Noting that permission has now been sought for the proposed Codling ORE project (ABP-320768-24), the applicant is requested to revise the noise impact assessment analysis in Chapter 8 to take account of submitted application.
- f) Section 8.6.6.11 of Chapter 8 relates to the cumulative piling noise impact scenario from the proposed development and Codling Wind Park. It is stated that it is a most unlikely occurrence that piling would be undertaken concurrently at the most northerly WTG location within the array area of the proposed development and most southerly WTG location on the Codling Wind Park offshore windfarm

array area. The applicant is requested to outline the justification for this assumption.

- g) Section 8.11.2.16 states that cumulative noise limits can be achieved by programming piling works to avoid sensitive periods in terms of airborne noise. Furthermore, Section 2.2.3 (Piling Schedules) of the Appendix 11.3: Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD Modelling outlines an indicative pile driving schedule for the five Phase 1 ORE projects in the Irish Sea. Noting that the Phase 1 ORE projects are independent of one another, the applicant is requested to provide further information regarding the programming schedule to provide certainty that no adverse cumulative noise (airborne) impacts will arise on coastal sensitive receptors.
- h) The Board notes that Chapter 8 makes reference to the use of mitigation measures including screens and dollys. The applicant is requested to provide further information as to what is involved in the implementation of these specific measures and their efficiency in reducing noise emissions.

As stated above (Point 10(w)), there appears to be no reference to screens and dollys in the underwater noise monitoring assessment (Appendix 11.1). The applicant is requested to clarify what noise mitigation measures are proposed to be relied upon in both the construction and operational phases of the proposed development to mitigate airborne noise impacts.

17. Climate

- a) The Board notes that while Chapter 20 outlines the GHG emissions associated with the construction and operational phases of the proposed development, it does not include a carbon savings calculation to demonstrate the carbon savings attributable to the project. The applicant is requested to outline the carbon savings from the project.
- b) The applicant is requested to provide a climate change risk assessment to examine the project's vulnerability to climate change and identify adaptation measures to increase project resilience, if necessary.

18. Civil and Military Aviation

- a) The applicant is requested to reassess the potential for impacts on civil and military primary surveillance radar (PSR) systems together with the Codling Wind Farm (ABP-320768-24), noting that planning approval has now been formally sought for the latter project.

19. Transboundary Consultation

- a) An Bord Pleanála notes that the observation received by the Territorial Sea Committee on behalf of the Isle of Man, raises, inter alia, concerns in relation to the lack of consideration of designated Manx sites, with potential for transboundary impacts in particular in relation to birds, fish/shellfish, and marine mammals. The applicant is requested to address the Isle of Man observation.
- b) The Board notes that Appendix 3.3, Transboundary Impact Screening states that the informal scoping consultation was conducted with ministries and industries in other states through the issuing of the Scoping Report in both September 2020 and July 2023. Table 3.3.1 lists the countries as Northern Ireland, England, Wales and Scotland, Isle of Man, and France. A summary of the discussions is outlined in Table 3.3.2. However, this latter Table does not provide a summary of discussions with the relevant representatives of France. The applicant is requested to provide a summary of the discussions held with the relevant representatives of France similar to that which has been provided for the other referenced countries.

Appendix A: Technical Note

A. Technical Note - GIS Data Submission

Submission Format: Geodatabase, Geopackage and Shapefiles. GeoTIFF and raster spatial data frames should be submitted in projected Irish Transverse Mercator ITM (IRENET95. Heatmap generation in either .csv or .zarr file format. Shapefiles (.shp) to allow plotting in spatial analysis software (e.g. QGIS or R).

For proposed infrastructure entirely within the Nearshore (up to 3NM from the HWM) the coordinate reference system can be Irish Transverse Mercator (ITM) (EPSG:2157) or ETRS 1989 (EPSG:4258).

For proposed infrastructure in the Outer Maritime Area (3NM and greater from the HWM) the coordinate reference system shall be ETRS 1989 (EPSG:4258) or ETRS1989 UTM Zone 28N (EPSG:25828), 29N (EPSG:25829) or 30N (EPSG:25830) as relevant. For proposed infrastructure in the Outer Maritime Area (beyond 3NM) that cover multiple UTM Zones the coordinate reference system ETRS 1989 LAEA (EPSG:3035).

See ['Guidance Note on Providing Spatial Data on Strategic Infrastructure Developments and Strategic Housing Developments.'](#)

B. Technical Note - Models and Submitting Model Outputs

The information provided should include full details on the models themselves to include the model name, resolution, relevant pressure, purpose, summary of activities, assumptions, justification, limitations (if any), validation, post construction infrastructure included, along with any other relevant information. A concise description of the model outputs (including pressure modelled, units, background level, change relative to baseline (e.g. %), list of activities assessed, as well as construction, operational and decommissioning phase consideration) should also be included.

Heat and contour maps showing the distribution of pressure (static or dispersive) over space and/or time should be produced and provided in paper format and also in high-quality Tagged Image File Format (TIFF) of minimum 300dpi and include suitable

location identifying information. The resolution of the underlying grid used to produce heatmaps should be appropriate to visualise patterns and/or presented at scale(s) relevant to a particular feature of interest. It is anticipated that multiple heatmaps (and associated data) may be required to adequately visualise all modelled output scenarios.

Appendix B: NSIP Templates

Templates from guidance document 'National Significant Infrastructure Projects – Advice on Cumulative Effects Assessment', Planning Inspectorate UK, September 2024 - [Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK](#)

- 'Appendix 1: Matrix 1 – Identification of 'other development' for CEA'
- 'Appendix 2: Matrix 1 – Assessment Matrix'

Appendix 1: Matrix 1 - Identification of 'other development' for CEA

Matrix 1 provides a means of summarising Stage 1 and Stage 2 of the CEA. It can be used to demonstrate that a systematic approach to identifying development for inclusion in CEA has been adopted. When cross referencing to evidence documents to support the conclusions, the specific document and section/paragraph number should be provided. The populated boxes below are designed to give an example of the type of information to be included.

'Other development' details						Stage 1		Stage 2			
ID	Application Reference	Applicant for 'other development' and brief description	Distance from project	Status	Tier	Within ZOI?	Progress to Stage 2?	Overlap in temporal scope?	Scale and nature of development likely to have a significant effect?	Other factors	Progress to Stage 3/4?
1	Xx/xx/xxxx	Energy Developer Land east of village 350MW CCGT District/ County Council name Brief details...	1.5km	DCO Approved 21/09/2014 Including any policy status...	Tier 1	Falls within landscape, transport, noise, air quality and socio- economic ZOI.	Yes	Yes Construction dates Operation dates	Yes The (x)ha site would be visible in the same field of view from local AONB viewpoint as the proposed NSIP (Paragraph x of Energy Developer's ES). Construction programmes overlap with potential to give rise to cumulative traffic, noise, air quality and socio-economic effects.	n/a	Yes
2	Xx/xx/xxxx	Small housing development District/ County Council name Brief details...	0.5km	Approved 27/10/2011 Including any policy status...	Tier 1	Falls within transport and noise ZOI	Yes	No Construction dates Operation dates	No Small development of less than (x)ha	n/a	No
3	Xx/xx/xxxx	Highways Developer Junction upgrade scheme description, location NSIP/Planning Inspectorate Brief details...	5km	EIA scoping application 10/05/2007 Including any policy status...	Tier 2	Would fall within distance based criteria for landscape ZOI but is not within Zone of Theoretical Visibility for scheme due to topography	No	n/a	n/a	n/a	n/a

Appendix 2: Matrix 1 - Assessment matrix

Matrix 2 is an example assessment matrix that provides a means of summarising the potential adverse or beneficial cumulative effects of the project with 'other development'. It can be used to demonstrate that a systematic approach to CEA has been adopted. When cross referencing to evidence documents to support the conclusions, the specific document and section/paragraph number should be provided. The populated boxes below illustrate the type of information that could be included, which may be supported by further detailed assessments/appendices as required.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with NSIP	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
<i>Insert name of topic being cumulatively assessed</i>						
<i>ID Number to be carried through from Matrix 1</i>	<i>Tier Number to be carried through from Matrix 1</i>	<i>Details to be carried through from Matrix 1</i>	<i>Details should build on information provided in Matrix 1 and Stage 3 evidence gathering as relevant</i>	<i>Provide relevant baseline description and assessment of effects, cross reference to any detailed information provided as supporting appendices to the CEA, where relevant. Set out any potential likely significant cumulative effects.</i>	<p><i>Set out proposed mitigation measure(s) to address cumulative effect(s).</i></p> <p><i>Cross reference to how stated mitigation is proposed to be secured e.g. reference DCO requirement number.</i></p> <p><i>Provide a statement regarding the contribution of each proposed development to the cumulative effect. If developments contribute equally to an effect, it may be reasonable to propose shared mitigation.</i></p> <p><i>If another development would contribute the majority of a cumulative effect, it may be appropriate to apportion the main burden of mitigation to that 'other development'. However, this should not be used as the basis for avoiding the need to provide appropriate mitigation measures in accordance with the EIA Regulations, and it is expected that appropriate mitigation for the proposed NSIP's effects would be incorporated within the application documents.</i></p> <p><i>Set out any joint mitigation proposals that have been achieved through consultation with 'other development' promoters</i></p>	<p><i>State residual significance of effect and whether beneficial or adverse.</i></p> <p><i>Provide brief commentary on the effectiveness of mitigation e.g. if mitigation reduces but does not avoid an impact or the residual effect is the same as the pre-mitigation effect</i></p>